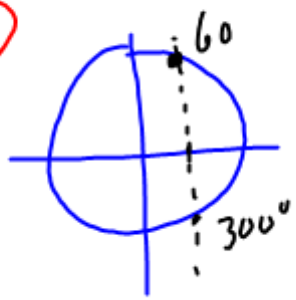
Find θ

① ~~$\cos^{-1}$~~ $\cos\theta = \frac{1}{2}$

$\theta = \cos^{-1}\left(\frac{1}{2}\right)$

$60°, 300°$

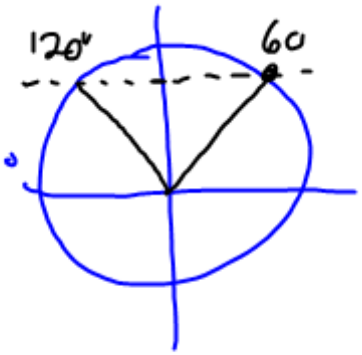


② $\cos\theta = 0$

$90°, 270°$

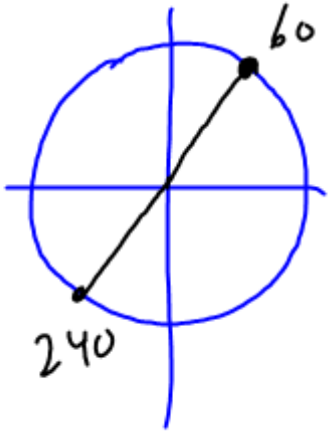
③ $\sin\theta = \frac{\sqrt{3}}{2}$

$60°, 120°$



④ $\tan\theta = \sqrt{3}$

$60°, 240°$



⑤ $\csc\theta = 2$

$30°, 150°$

No Calc. Fill in tables, graph on graph paper

$y = \sin x$

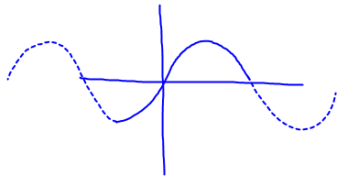
x	y
$-\frac{\pi}{2}$	-1
$-\frac{\pi}{4}$	$-\frac{\sqrt{2}}{2}$
0	0
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
$\frac{\pi}{2}$	1
$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$
π	0

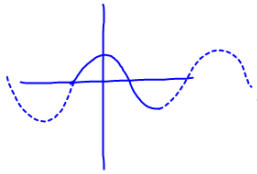
$y = \cos x$

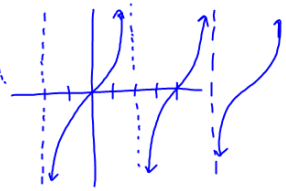
x	y
$-\frac{\pi}{2}$	0
$-\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
0	1
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
$\frac{\pi}{2}$	0
$\frac{3\pi}{4}$	$-\frac{\sqrt{2}}{2}$
π	-1

$y = \tan x$

x	y
$-\frac{\pi}{2}$	undefined
$-\frac{\pi}{4}$	-1
0	0
$\frac{\pi}{4}$	1
$\frac{\pi}{2}$	undefined
$\frac{3\pi}{4}$	-1
π	0







vert. line test: is it a function?

horizontal line test: is the inverse a function?

one-to-one: passes both tests

$y = x^2$

Is it a function

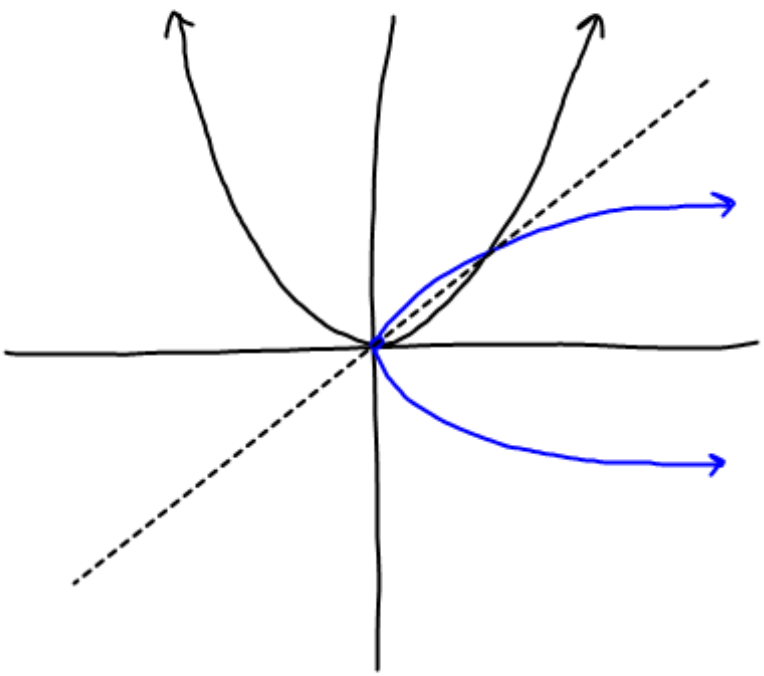
yes

Is its inverse a function

No

Inverse

$y = \pm\sqrt{x}$



Inverse

- switch x + y

$(x, y) \rightarrow (y, x)$

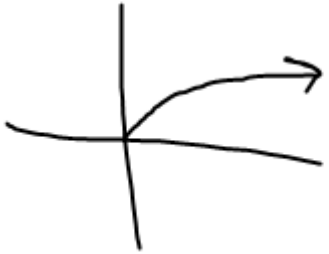
- reflects over the $y = x$ line

Restrict Domain to get one-to-one function

$y = x^2, \quad x \geq 0$

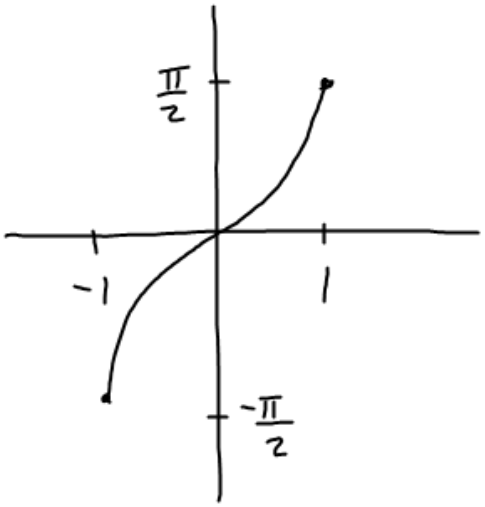
Inverse

$Y = \sqrt{x}$ → function



$y = \arcsin(x)$

$y = \sin^{-1}(x)$

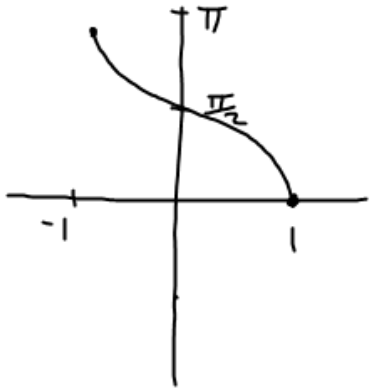


D: $[-1, 1]$

R: $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

$y = \arccos(x)$

$y = \cos^{-1}(x)$

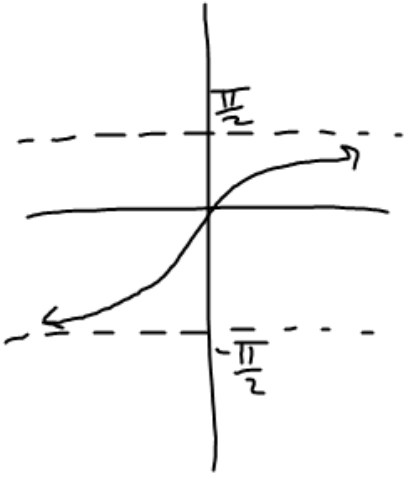


D: $[-1, 1]$

R: $[0, \pi]$

$y = \arctan(x)$

$y = \tan^{-1}(x)$



D: $(-\infty, \infty)$

R: $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

$\csc^{-1}(x) = \sin^{-1}\left(\frac{1}{x}\right)$

$\sec^{-1}(x) = \cos^{-1}\left(\frac{1}{x}\right)$

$$\cot^{-1}(x) = \begin{cases} \tan^{-1}\left(\frac{1}{x}\right), & x > 0 \\ \tan^{-1}\left(\frac{1}{x}\right) + \pi, & x < 0 \\ \frac{\pi}{2}, & x = 0 \end{cases}$$

$$\cot^{-1}(x) = \frac{\pi}{2} - \tan^{-1}(x)$$

the cos of What angle is $\frac{1}{2}$?

$\cos^{-1}\left(\frac{1}{2}\right) = 60°, 300°$

$\arccos(0) = 90°, 270°$

$\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = 60°, 120°$

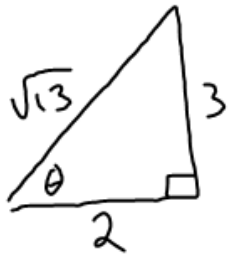
$\arctan(\sqrt{3}) = 60°, 240°$

$\csc^{-1}(2) = 30°, 150°$

$\sin\left(\tan^{-1}\frac{3}{2}\right) =$

angle

θ



$\sin(\theta) = \frac{3}{\sqrt{13}}$

$= \frac{3\sqrt{13}}{13}$

$\sin(\text{angle}) = \text{value}$

$\sin^{-1}(\text{value}) = \text{angle}$

$\sin \longrightarrow$ foward on table

$\sin^{-1} \longleftarrow$ backward on table

$\arcsin = \sin^{-1}$

Sect. 6.1 # 1-20, 25-29, 58, 63-68, 75

Ignore this

① $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right) =$

② $\sin\theta = \frac{\sqrt{2}}{2}$ find θ